

LA-UR-21-29079

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Title: Production Qualification Training Course 5 of 8 Engineering Evaluation
Authorization

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Production Qualification Training

Course 5 of 8

Engineering Evaluation Authorization

Joint Initiative: W-8 Group and ALDW-DAQ

Curriculum Overview

This curriculum is intended to:

- Teach you about the Engineering Evaluation Authorization
- Explain the course subject in detail
- Provide references and guides that will help beyond this training



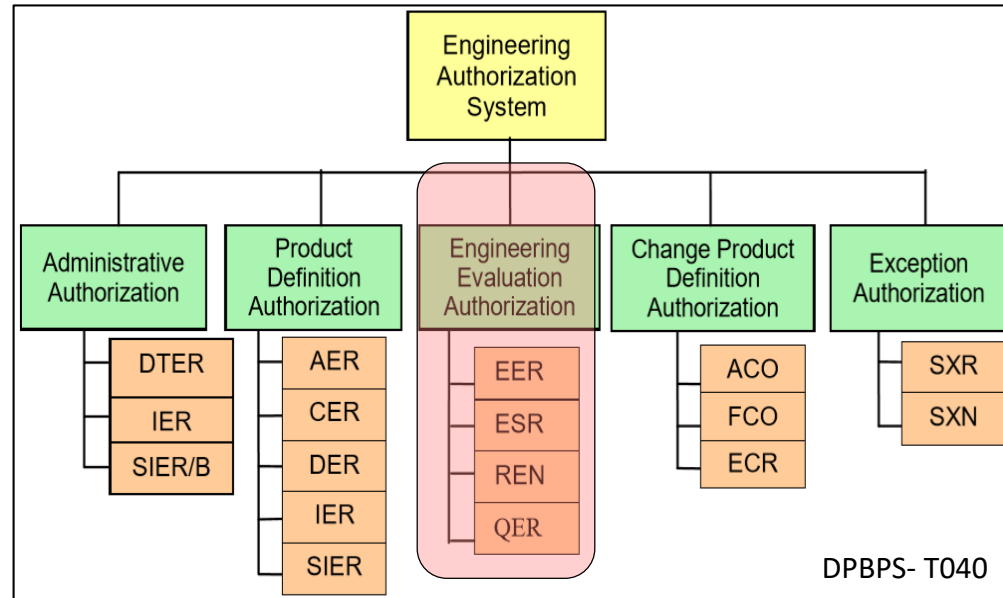
Utrain Course	Procedure	Title	Course #
RR 49297	W-SE-0008	Engineering Authorization System	Course 1
RR 49256	W-SE-0044	Production Qualification Procedure	Course 2
	W-DG-0003	Engineering Evaluation Plan Template	Course 2
	W-DG-0004	EE Data Package Template	Course 2
	W-DG-0005	Engineering Evaluation (EE Data Package Checklist)	Course 2
RR 49262	W-SE-0046	Administrative IER and SIER/B Procedure	Course 3
RR 49272	W-SE-0051	Definition IER and SIER Procedure	Course 4
RR 49273	W-SE-0052	DER, AER, CER Procedure	Course 4
RR 49268	W-SE-0048	Re-evaluation Notices (RENs) Procedure	Course 5
RR 49256	W-SE-0049	Engineering Evaluation Release Procedure	Course 5
RR 49271	W-SE-0050	Qualification Evaluation Release Procedure	Course 5
RR 49298	W-SE-0047	Advanced Change Orders, Final Change Orders, and Engineering Change Requests Procedure	Course 6
RR 49257	W-SE-0045	SXN/SXR Procedure	Course 7
RR 53083	TBD	Engineering Evaluation Overview	Course 8
	W-DG-0002	EA Cheatsheet and Checklist Desktop Guide	All



Engineering Authorization System Overview

The Engineering Authorization (EA) System provides a formal communication method among M&O contractors, including configuration control and record management of EAs.

EAs authorize actions that affect product definition and related product and document information related to development, production, surveillance and dismantlement activities.



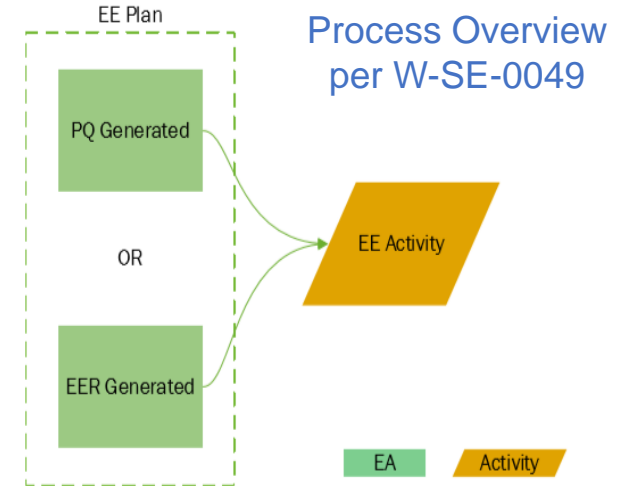
Training Objectives

- At the end of this training, you will:
 - Recognize the four types of Engineering Evaluation Authorizations and their usage
 - Understand the requirements
 - Know where to gain assistance in executing engineering authorizations
- What this training will not do:
 - Train you on how to navigate the EA tool (Arbortext), PDMLink, or PRIME.
 - Authorize you to author or approve EAs.



Engineering Evaluation Release (EER)

- The Engineering Evaluation Release (EER) is an Engineering Evaluation (EE) Plan document by which the Design Agency (DA) documents the plan, requirements and results of engineering evaluations of production and surveillance activities
- If used as a part of the EE Plan, the EER covers the evaluation and qualification activities. These may be additionally documented in a PQ, or directly in the EER. If relegated to a PQ, the EER must reference the PQ
- When documenting the qualification plan or evaluation activities, the EER will document the EE team members, product and processes to be evaluated, required activities to be reviewed, documents and records required to be provided as a data package for review, the product definition set to be used, and the number of parts/lots required for evaluation



Evaluation activities can span the full life cycle of the weapon system and related components, from development and production through surveillance and retirement.




Engineering Evaluation Release (EER)

- The EER may be revised and used to document progress of PQ activities.
- The EER must be updated to include the results of the evaluation.
- The EER must document the procedures, by issue, evaluated by the EE – this ensures these procedures are controlled under the QER.
- All related EERs must be referenced in the QER; the EER should reference any existing QER.



Desktop Guide, W-DG-0002

- A desktop guide has been generated to aid in validating, authoring and approving EAs
- This desktop guide has cheat sheets for the Product Definition Authorizations

 <p>Weapons Program Desktop Guide</p>		
<p>EA Cheatsheet and Checklist Desktop Guide</p> <p>Los Alamos National Laboratory • P.O. Box 1663, Los Alamos, NM 87545</p>		
Number	Revision	Effective Date
W-DG-0002U	C	August 12, 2021



EER Cheat Sheet

SAMPLE

EER Cheatsheet

Rev A

References:
NAP24
T046
T040
W-SE-0049

This document: W-DG-0002

- Use the [LANL EE Plan Template](#) with embedded guidance to ensure that the EER is properly completed
- An EER may be used to supplement the PQ as the Engineering Evaluation (EE) Plan
- The PRT documents the qualification and validation activities in the EE Data Package

NWC Release Date: 2018 08 01 6:30:05 MT
Category: Evaluation Release
Authorization Title: Engineering Evaluation Release
Document Number: 20181234LA
Revision: 1

Weapon Program: B2-1
Affected Assemblies: 1K9876
Related Authorizations: EER 20184321LA

Code: EER

ICO: NONE

The EE Plan is released prior to conducting EE activities

Relate applicable ICO if applicable

The next-level assembly that is affected by this product EER

Identify other EA documents associated with the EER. List any associated RENs, EERs, QERs, or other types of EAs concerned with the contents of the EER.

APPROVAL

Site	Name
LA	Someone Here
LA	Someone Else Here

Organization	Date Approved
Q-nn	2018-08-01
W-nn	2018-08-01

ALT/LEP Program Group Leader and author's GL must approve. Add Legacy/Tail Group Leader for major assemblies.

DISTRIBUTION

	Site	Name
From:	LA	Someone Here
To:	KC	Someone There
Copy To:	LA	Someone Else
	KC	Another Person

Organization	Phone Number
nnn	505-456-7890
nnn	816-456-7890
nnn	505-456-7891
nnn	816-456-7891

E-Mail
zzzz@lanl.gov
yyyy@kcp.com
xxxx@lanl.gov
vvvv@kcp.com

Incorrect or wrong classified email addresses prevent proper routing

Minimum distribution is shown in the example. Include the PA responsible for the product or process.

REASON FOR RELEASE



EER Cheat Sheet

SAMPLE

REASON FOR RELEASE

/Rev 0/ (2018-08-01)

1.0

Initial release of the Engineering Evaluation (EE) Plan for Part 1K1234, Generic Part Name A.

/Rev 1/ (2019-08-02)

1.0

To document the completion of the EE Plan for Part 1K1234, Generic Part Name A.

Succinctly state the reasons for the particular release. Highlight any significant changes.

REFERENCE AND REMARKS

/Rev 0/ (2018-08-01)

1.0

None

Initial EER release leaves this field empty

/Rev 1/ (2019-08-02)

1.0

The EE Data Package for the EE is in draft form at: Classified PDMLink folder Lib-EE/B2-1/ Generic Part Name A_EEDP.pdf

Limit this field to the storage location of the data package evidentials

DRAWING LIST

Drawing Number	DA Suf	PA Suf	Dwg Iss	Dwg Loc	Drawing Title	Drawing Information
1K1234	00		B	LA	(U) Generic Part Name A	NONE

List only the part(s) to be evaluated by this EE Plan. The suffixed part number is not placed in the Drawing Number field. The Dwg Loc field is the organization that has **maintenance** responsibility for the product. If this is not LANL (LA), the DTER should be listed in the Related Authorizations field.

AUTHORIZATION DETAILS

1.0

1. General Information
2. PRT Agreements
3. Product Definition and Documents
4. Design Qualification Activities
5. Product/Surveillance Qualification Activities
6. Product Readiness
7. Engineering Authorizations
8. Hardware Plans
9. PRT Membership
10. PRT Roles and Responsibilities

These sections correspond to the EE Plan required sections including numbering and title. Reference the LANL EE Plan Template with embedded guidance to ensure that each section is completed properly.



Minimum Required Approvals Per W-SE-0049U

Usage	System Group Office	Production Liaison Group Office	Surveillance Group Office	GTS ¹ Group Office	Detonator Group Office	Author's Group Office
Components	X	X				X
Components (GTS ¹)	X	X		X		X
Components (Detonator)	X	X			X	X
Major subassembly (Primary, Secondary)	X	X				X
Major subassembly (GTS ¹)	X	X		X		X
NEP ² , RB ³ , AUR ⁴ , JTA ⁵	X	X				X
Surveillance Processes	X		X			X
Surveillance Processes (GTS ¹)	X		X	X		X
Surveillance Processes (Detonator)	X		X		X	X
1 Gas transfer system (GTS) 2 Nuclear explosive package (NEP) 3 Re-entry body (RB) 4 All-up round (AUR) 5 Joint Test Assembly (JTA)						



Evaluation Status Release (ESR)

- The ESR is an optional release used by the Product Realization Team (PRT) to document the status of the first three stages of the concurrent qualification process described in DPBPS.
- Each stage ESR documents the current qualification status of that stage (acceptable, conditional, or unacceptable).
- If later events cause the status of that stage to change, a revision of the stage ESR is issued to reflect the new status.
- For a status other than acceptable, the PRT will determine, direct, and document the activities (including schedule and responsibilities) necessary to maintain concurrent qualification and to resolve the issues that resulted in a less than acceptable status.
- The completion of Stage IV must be documented in a QER. The qualification status for ESRs assigned during Stage I through Stage III must be “acceptable” before an “acceptable” QER at Stage IV is released.



ESRs are not used by LANL, but may be encountered, so they are included here for completeness



Qualification Evaluation Release (QER)

- The QER is issued to reflect the results of evaluation activities. It is the authorization for production.
- A QER may be assigned a status of “Acceptable”, “Conditional” or “Expired”.
 - A QER must be given an “Acceptable” status only when all subordinate QERs have attained an “Acceptable” status.
 - A QER must be given a “Conditional” status when there are conditions placed on the use of product (EE plan activities incomplete, EE plan revision with results not released, referenced documents not under configuration management, or subordinate QER has “Conditional” status).
 - A QER must be given an “Expired” status when a re-evaluation will be conducted and further acceptance of product is to be suspended pending results of the re-evaluation, or when a problem is discovered that calls into question product accepted under that QER.



Qualification Evaluation Release (QER)

- A “Conditional” QER must state:
 - How product produced under this status may be used.
 - What condition(s) must be resolved to achieve “Acceptable” status.
 - The actions that must be taken to resolve cited condition(s).
 - The organization responsible for completing the action(s).
 - The date by which the conditions will be resolved (or the QER will be “Expired”).
- To ensure the completion of DPBPS requirements in addition to T046, the use of Conditional QERs should involve the DA Quality organization

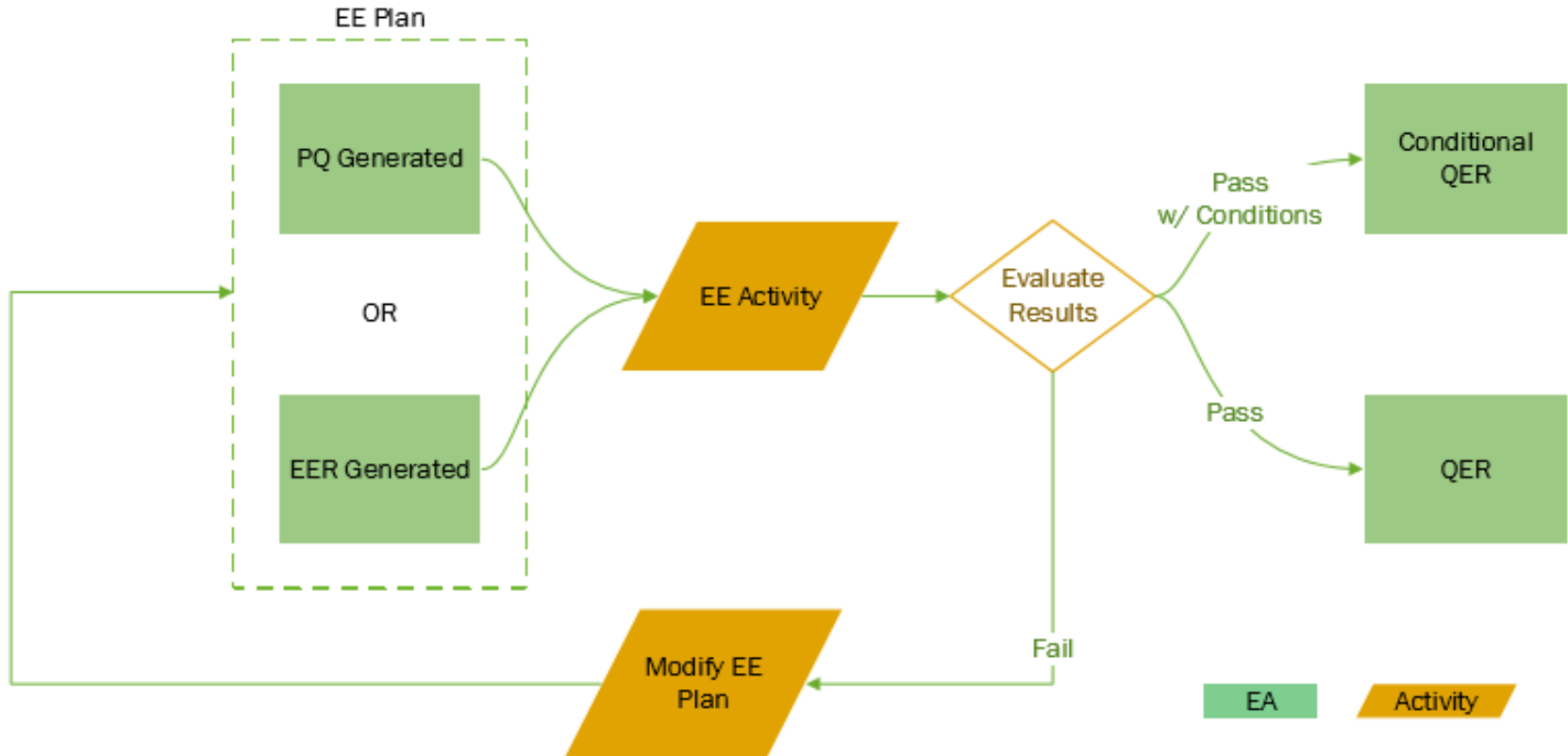


Qualification Evaluation Release (QER)

- When a QER is “Expired” due to discovery of a problem that calls into question product accepted under that QER, the QER must document the disposition and re-evaluation decisions for previously accepted product.
- If the status of the engineering evaluation is “Acceptable” or “Conditional”, the QER authorizes use of listed product or process to support directive schedule.
- The QER must be released prior to acceptance of the initial production run or initiation of surveillance or dismantlement activities.
- For traceability purposes, when a previous QER, REN, EER or PQ exists, they must be referenced in all related QERs.



Process Overview of QER Per W-SE-0050U



QER Cheat Sheet

SAMPLE

QER Cheatsheet - Product

Rev A

This document: W-DG-0002

References:
T046
W-SE-0008U
NAP 24A
W-SE-0050

- All products are to be authorized by a QER
- Focus the QER on the "authorization" for the product
- Ensure that the corresponding EE Plan is updated to reflect the completion of activities

NWC Release Date: 2018 08 01 6:30:05 MT
Category: Evaluation Release
Authorization Title: Qualification Evaluation Release
Document Number: 2018L1234LA
Revision: 0
Part Number: 1K1234-00
Weapon Program: B2-1
Affected Assemblies: 1K1234
1K5678
Related Authorizations: EER 20175678LA

Code: QER

Status: ACCEPTABLE

A QER may only be issued as:
ACCEPTABLE - typical
CONDITIONAL - Coordinate with LANL management for implementation.
EXPIRED - used for rescinding a QER. Coordinate with LANL management for implementation.

Multiple Weapon Programs must be explicitly authorized to use the qualified product

This is the next level higher assembly that this QER'd product is used in

List the EER(s), related QERs, applicable RENS, and DTERs

APPROVAL

Site	Name
LA	ALT/LEP Group Leader
LA	Prod. Liaison Group Leader

Organization	Date Approved
Q-nn	2018-08-01
W-nn	2018-08-01

Add Legacy/Tail Group Leader for major assemblies

DISTRIBUTION

	Site	Name
From:	LA	Production Liaison
To:	KC	PA Engineer
Copy To:	LA	DA Systems Eng.
	KC	Quality Eng. (etc.)
	LA	Next Level Production Liaison

Organization	Phone Number	E-Mail
W-nn	505-910-1112	aaa@lanl.gov
Dnnn	816-131-4151	bbb@kcp.com
Q-nn	505-617-1819	ccc@lanl.gov
Dnnn	816-202-1222	ddd@kcp.com

Minimum distribution is shown in the example. Include the PA responsible for the product or process. Incorrect or wrong classified email addresses prevent proper routing



QER Cheat Sheet

SAMPLE

REASON FOR RELEASE

/Rev 0/ (2018-08-01)

- 1.0 Assign **ACCEPTABLE** qualification status for **1K01234-00** Generic Part Name A and authorize it for usage in **B2-1**.

The **STATUS** must match the Status field. The **product** (part number including suffix) must match the Drawing List field. The **intended usage** must reference the program(s) and match the Weapon Program field. The QER update in response to RENs goes here, as well.

REFERENCE AND REMARKS

- 1.0 The Generic Part Name A TRL is 8
2.0 The Generic Part Name A MRL is 7
3.0 The Generic Part Name A Producibility Rating is C
4.0 The Generic Part Name A QER is qualifying the 1K1234-00 and covers the process of its fabrication from the raw sheet material. The qualification of 1K5678-00 that uses 1K1234-00 is handled in the QER for 1K5678-00 and will include the keyhole process for assembly.
5.0 The EE Data Package for the EE is at: Classified PDMLink folder Lib-EE/B2-1/Generic Part Name A_EEDP.pdf
6.0 Applicable EE/Qualification Plan: PQ1K5678-000
7.0 Applicable Product Specification: PS1K1234-000

The TRL, MRL, and Producibility ratings are confirmed by the PRT at the time of the QER

Describe how this QER fits in the qualification structure to assist the reader (above, below and adjacent)

Provide a reference to the EE Data Package

Provide the PS and PQ documents that cover this product. Include the issue level.

DRAWING LIST

Drawing Number	DA Suf	PA Suf	Dwg Iss	Dwg Loc	Drawing Title	Drawing Information
1K1234	00		B	LA	(U) Generic Part Name A	NONE

List only the part(s) authorized by this QER. The suffixed part number is not placed in the Drawing Number field. The Dwg Loc field is the organization that has **maintenance** responsibility for the product. If this is not LANL (LA), the DTER should be listed in the Related Authorizations field.

AUTHORIZATION DETAILS

- 1.0 QE Lot Disposition: The QE lot parts starting with serial number 5011 are acceptable for directive schedule use.
2.0 Noted Constraints: Products are only authorized that are produced using the serial number 34 Stamping machine.

State the disposition of the QE lot parts. Include serial number, lot number, or other identifying aspect of the parts.

Highlight any constraints that should be visible in the QER. Ensure that the EE Plan and EE Data Package clearly reflect this constraint and provide the technical justification.



Minimum Required Approvals Per W-SE-0050U

Usage	Chief Engineer	W-DO ¹	Q-DO ²	System Group Office	Production Liaison Group Office	Surveillance Group Office	GTS ³ Group Office	Detonator Group Office	Author's Group Office
Components		X	X	X	X				X
Components (GTS ³)		X	X	X	X		X		X
Components (Detonator)		X	X	X	X			X	X
Major subassembly (Primary, Secondary)		X	X	X	X				X
Major subassembly (GTS ³)		X	X	X	X		X		X
NEP ⁴ , RB ⁵ , AUR ⁶	X	X	X	X	X				X
Surveillance Processes		X	X	X		X			X
Surveillance Processes (GTS ³)		X	X	X		X	X		X
Surveillance Processes (Detonator)		X	X	X		X		X	X
1. Weapon Systems Engineering Division Office (W-DO) 2. Weapon Stockpile Modernization Division Office (Q-DO) 3. Gas transfer system (GTS) 4. Nuclear explosive package (NEP) 5. Reentry body (RB) 6. All-up round (AUR)									



Re-Evaluation Notice (REN)

- The REN is a notification that a condition exists that may require re-evaluation for a product and/or process and may include a recommendation as to whether or not re-evaluation is needed.
- The PA must notify the DA by issuance of a REN when significant changes to the authorized process(es) will occur or that an authorized process has been out of production for 12 months (or other interval as stated in the product definition).

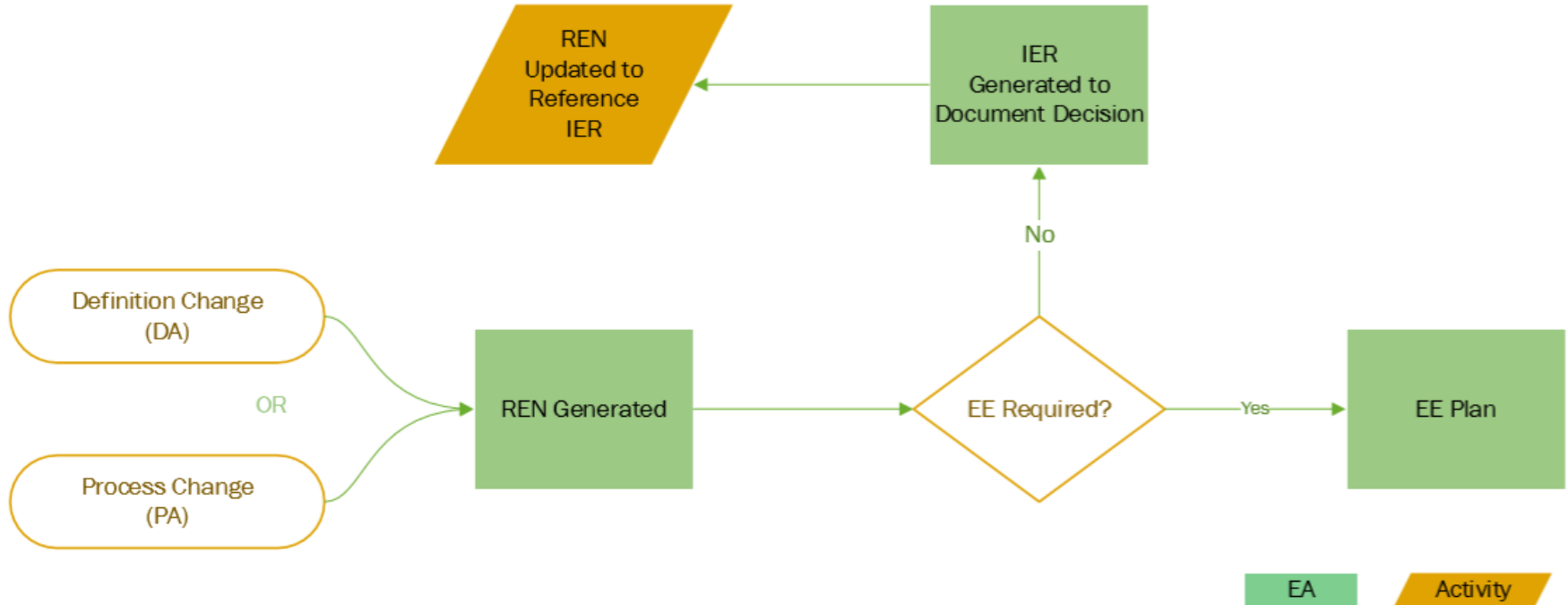


Re-Evaluation Notice (REN)

- The DA has 30 days from initial release date of the REN to release a response documenting whether a re-evaluation will be initiated. The decision to conduct re-evaluation, or not, is documented in a revision to the REN. The DA can request the PA revise the REN with the determination.
- If re-evaluation is determined necessary, the qualification or engineering evaluation plan is developed and released.
- The REN must reference the QER, and if re-evaluation is necessary, the EER or PQ must reference the REN.



Process overview of REN Usage Per W-SE-0048U



REN Checklist

REN Acceptance Checklist			Overall Disposition	
REN _____			Accept ____	Reject ____
#	Category	Check	Yes	No
1	Part Number	Affected part number(s) listed (including suffix)?		Reject
2	Weapon Program	Affected weapon program(s) listed?		Reject
3	Affected Assemblies	Is this field blank or none?		Reject
4	Related Authorizations	Latest QER or EER listed?		Reject
5a	Distribution	Does the EA have a Production Liaison listed? [Clarification: LANL, W-8]		Reject
5b	Distribution	Does the EA have both W&Q Tails listed? [Clarification: LANL, Q-15/Q-17 and LANL, W-1/W-4]		Reject
6	Reason for Release	Does the EA succinctly state the reasons for release?		Reject
7	Drawing List	Does the drawing list contain the part(s) defining drawing being affected by the REN?		Reject
8	Drawing List	Is the Drawing Issue the current release?		Reject
9	Authorization Details	Does the Authorization Details provide sufficient information to enable the evaluator to understand the scope and impact of the requested re-evaluation?		Reject



REN Cheat Sheet

SAMPLE

REN Cheatsheet

Rev A

This document: W-DG-0002

References:
NAP-24A
T040
T047
W-SE-0048

- A Re-Evaluation Notice (REN) generated by the LANL Design Agency documents the intent to re-evaluate a manufacturing process at a Production Agency (when not initiated by the Production Agency).
- The REN identifies the process to be re-evaluated and the reason for the re-evaluation.

NWC Release Date: 2019 05 24 6:30:05 MT
Category: Evaluation Release
Authorization Title: Re-Evaluation Notice
Document Number: 20192678LA
Revision: 0
Part Number: 1K1235-00
Weapon Program: B2-1
Affected Assemblies: 1K9877-00
Related Authorizations: QER 20190600LA
EER 20181345LA
EER 20192670LA

Code: REN
ICO: NONE

Relate applicable ICO if applicable

The next-level assembly that is affected by this REN

Identify other EA documents associated with the REN. List any associated EERs, QERs, or other types of EAs concerned with the contents of the REN.

APPROVAL

Site	Name
LA	Someone Here
LA	Someone Else Here

Organization	Date Approved
Q-nn	2019-05-23
W-nn	2019-05-23

DISTRIBUTION

	Site	Name
From:	LA	Someone Here
To:	KC	Someone There
Copy To:	LA	Someone Else
	KC	Another Person

Organization	Phone Number	E-Mail
nnn	505-456-7890	zzzz@lanl.gov
nnn	816-456-7890	yyyy@kcp.com
nnn	505-456-7891	xxxx@lanl.gov
nnn	816-456-7891	vvvv@kcp.com



REN Cheat Sheet

SAMPLE

REASON FOR RELEASE

/Rev 0/ (2019-05-24)

- 1.0 To notify the KCNSC B2-1 Program of the need to re-evaluate the scratch inspection process for the 1K1235 Widget.

Succinctly state the reasons for the EA release

REFERENCE AND REMARKS

- 1.0 Recently, widgets have been delivered to LANL that had scratches that did not meet the scratch requirement on drawing 1K1235.
- 2.0 Inspection of the Widget for scratches is fairly subjective, dependent upon first identifying the presence of a scratch through visual inspection and then evaluating the scratch against the design requirement by using a toothpick to compare the scratch on the Widget to "scratch standards." Inspectors are trained using a performance-based training program. This re-evaluation will focus on the training program for identifying and evaluating scratches. EER 20192670LA is applicable to this re-evaluation.

Provide relevant background information and technical information supporting the re-evaluation

DRAWING LIST

Drawing Number	DA Suf	PA Suf	Dwg Iss	Dwg Loc	Drawing Title	Drawing Information
1K1235	00	N/A	B	LA	(U) WIDGET	NONE

List only the part(s) to be evaluated by this EE Plan. The suffixed part number is not placed in the Drawing Number field. The Dwg Loc field is the organization that has **maintenance** responsibility for the product. If this is not LANL (LA), the DTER should be listed in the Related Authorizations field.

AUTHORIZATION DETAILS

- 1.0 The LANL Design Agency will re-evaluate the scratch inspection process for the 1K1235 Widget at KCNSC, focusing on the performance-based training program that trains inspection personnel to identify and evaluate scratches.
- 2.0 EER 20192670LA provides the re-evaluation plan details.
- 3.0 Please contact the LANL Design Agency Widget design engineer to schedule the re-evaluation at KCNSC.

Very specific, with sufficient information to enable the team to understand the need and scope for the re-evaluation



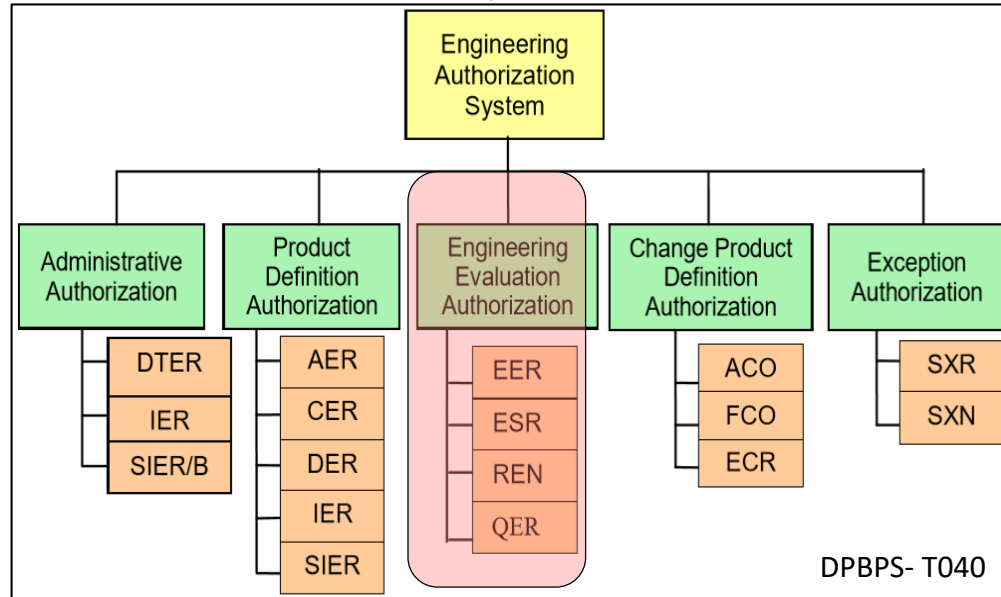
Minimum Required Approvals Per W-SE-0048U

Usage	Chief Engineer	W-DO ¹	Q-DO ²	System Group Office	Production Liaison Group Office	Surveillance Group Office	GTS ³ Group Office	Detonator Group Office	Author's Group Office
Components		X	X	X	X				X
Components (GTS ³)		X	X	X	X		X		X
Components (Detonator)		X	X	X	X			X	X
Major subassembly (Primary, Secondary)		X	X	X	X				X
Major subassembly (GTS ³)		X	X	X	X		X		X
NEP ⁴ , RB ⁵ , AUR ⁶	X	X	X	X	X				X
Surveillance Processes		X	X	X		X			X
Surveillance Processes (GTS ³)		X	X	X		X	X		X
Surveillance Processes (Detonator)		X	X	X		X		X	X
¹ Weapon Systems Engineering Division Office (W-DO) ² Weapon Stockpile Modernization Division Office (Q-DO) ³ Gas transfer system (GTS) ⁴ Nuclear explosive package (NEP) ⁵ Reentry body (RB) ⁶ All-up round (AUR)									



Summary of Engineering Evaluation Authorization(s)

- The EER is used to document the entire engineering evaluation process leading up to qualification of a process or product.
- The ESR is used to mark the progression of the Product Realization Team.
- The QER authorizes production, or, when warranted, suspends product acceptance.
- The REN is used to communicate process changes that may require re-evaluation.



References

Number	Title	Website
DBBPS -T040	Engineering Authorization System	https://dpbps.sandia.gov/SitePages/homepage.aspx
DBBPS -T046	Quality Product or Process Business Rules	https://dpbps.sandia.gov/SitePages/homepage.aspx
W-SE-0008U	Engineering Authorization System	
W-SE-0048U	Re-evaluation Notices (RENs) Procedure	
W-SE-0049U	Engineering Evaluation Release Procedure	https://int.lanl.gov/org/ddw/aldw/of-fice-design-agency-quality/design-agency-procedures/system-engineering-procedures.shtml
W-SE-0050U	Qualification Evaluation Release Procedure	
W-DG-0002	LANL EA Cheatsheet and Checklist Desktop Guide	https://int.lanl.gov/org/ddw/aldw/of-fice-design-agency-quality/design-agency-procedures/desktop-guides.shtml



Resources

When you have issues or questions regarding the Engineering Authorization System, there are resources you can go to:

- ALDW Office of Design Agency Quality (ALDW-DAQ)
- Production Liaison Group (W-8)
- Engineering Authorization Team (W-11)
- W- and Q- Division Group Leaders
- This training



Acronyms

DTER	Drawing Transfer Engineering Authorization
IER	Information Engineering Authorization
SIER/B	Special Instruction Engineering Release/B Authorization
AER	Advanced Engineering Authorization
CER	Complete Engineering Authorization
DER	Development Engineering Authorization
SIER	Special Instruction Engineering Authorization
EER	Engineering Evaluation Authorization
ESR	Evaluation Status Release



Acronyms (continued)

REN	Reevaluation Notification Authorization
QER	Qualification Evaluation Authorization
ECR	Engineering Change Request Authorization
ACO	Advanced Change Authorization
FCO	Final Change Authorization
SXN	Specification Exception Notice Authorization
SXR	Specification Exception Authorization
DA	Design Agency
PA	Production Agency
DPBPS	Defense Programs Business Process System
M&O Contractors	KCNSC / LANL / LLNL / NNSS / PX/ SNL / SRS / Y-12



Course 5: Complete

